

Optimal deep decarbonization policies for medium-sized players in the context of international competition and geopolitical uncertainty

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Extended Abstract

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Abstract Summary

Worldwide efforts to mitigate Global Warming have been made ever since the Rio “Earth Summit” in 1992, yet the current situation and prospects are worrying – and certainly more troubling than ever since the Paris agreement was concluded end of 2015. While Europe and other countries are developing and implementing deep decarbonization strategies, others, including the U.S. and Russia, are setting different priorities – entailing accrued geopolitical tensions.

Is it advantageous to pursue ambitious climate policies under these circumstances – and to what extent? This question is now also raised in Europe and sometimes gives rise to heated debates. The present study contributes to the debate by developing a stylized yet formal model. This analysis complements the “emerging endgame” (Pahle et al. 2025, Sultani et al. 2026) that results from consistent net-zero target policies with economic players (firms) who are involved in competitive global markets and who face considerable economic and policy uncertainty.

The model is framed and solved as an optimal control problem for a fictitious policymaker. Both economic welfare and climate policy goals are part of the policymaker’s objective function. The policymaker yet only indirectly controls emissions since these are a consequence of production processes by firms facing both domestic and international competition.

The approach hence allows to illustrate the trade-offs between stringent climate policies and economic competitiveness in the current political context. Especially, it emphasizes the potential adverse effects climate policies may have on industries facing strong international competition. And it enables a consistent analysis of the potential benefits and limitations of policy instruments designed at limiting these adverse effects.

Presenting Author Biography

cf. <https://ewl.wiwi.uni-due.de/team/christoph-weber-70/>